

REMARKS

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Claims 1, 3-5, 9, and 14 are Allowable

The Office has rejected claims 1, 3-5, 9, and 14, at paragraph 2 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 5,692,068 ("Bryenton") in view of U.S. Patent No. 4,464,766 ("Nishito"), and further in view of U.S. Patent No. 4,611,345 ("Ohnishi"). Applicants respectfully traverse the rejections.

None of the cited references, including Bryenton, Nishito, and Ohnishi, disclose or suggest the specific combination of claim 1. For example, the Office Action admits that Bryenton does not disclose a memory to store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 1. See Office Action, page 3. Further, Ohnishi does not disclose this element of claim 1. In contrast to claim 1, Ohnishi discloses scanning one side of a bill with an image sensor 2A on one edge of a bill and another image sensor 2B on an opposite edge of the bill, and recording information for Zone 1 and Zone 2 on each edge, which is a total of four images. See Ohnishi, Figs. 5, 7, 8, 9, and col. 4, lines 16-18. Further, Nishito does not disclose or suggest this element of claim 1. In contrast to claim 1, Nishito discloses scanning a center region of a bill. See Nishito, Figs. 1, 5, and col. 2, lines 40-45. Therefore, Bryenton, Nishito, and Ohnishi, separately or in combination, do not disclose each and every element of claim 1. Hence, claim 1 is allowable.

Claims 3-5 depend from claim 1, which Applicants have shown to be allowable. Hence, Bryenton, Nishito, and Ohnishi fail to disclose at least one element of each of claims 3-5. Accordingly, claims 3-5 are also allowable, at least by virtue of their dependence from claim 1.

Further, the dependent claims recite additional features not disclosed by the cited references. For example, Bryenton does not disclose an output selector that has a tactile output mode, an audible tone mode, and a speech mode, as recited in claim 4. In contrast to claim 4, Bryenton discloses that a user interface provides a synthesized voice through loudspeakers,

which can be replaced by a tactile device or other suitable output device, but Bryenton does not disclose an output selector allowing tactile and audible tone in addition to speech mode. *See* Bryenton, col. 4, lines 29-31, and 49-52. Further, neither Nishito nor Ohnishi disclose or suggest this element of claim 4. For this additional reason, claim 4 is allowable.

Further, Bryenton does not disclose a tactile output device to vibrate in a pattern unique to the denomination of the bill, as recited in claim 5. In contrast to claim 5, Bryenton discloses that a user interface can be replaced by a tactile device or other suitable output device, but Bryenton does not disclose the tactile device to vibrate in a pattern unique to the denomination of the bill. *See* Bryenton, col. 4, lines 50-52. Further, neither Nishito nor Ohnishi disclose or suggest this element of claim 5. For this additional reason, claim 5 is allowable.

None of the references, including Bryenton, Nishito, and Ohnishi, disclose or suggest the specific combination of claim 9. For example, the Office Action admits that Bryenton does not disclose a camera to capture an image of a bill, as recited in claim 9. *See* Office Action, page 2. Nishito does not disclose a camera to capture an image of a bill, as disclosed in claim 9. Instead, Nishito discloses use of a line sensor, such as a CCD line sensor or other two-dimensional scanning device to provide a scanned signal of only a central portion of a bill (not the entire bill) by scanning in the direction of the X-axis, with the bill conveyed by a conveyor in the direction of the Y-axis. *See* Nishito, col. 2, lines 37-45, col. 3, lines 6-12, col. 14, lines 29-32, and Fig. 5. Further, Ohnishi does not disclose this element of claim 9. In contrast to claim 9, Ohnishi discloses use of a pair of image sensors through Selfoc lens arrays. *See* Ohnishi, col. 2, lines 34-36. Therefore, Bryenton, Nishito, and Ohnishi, separately or in combination, do not disclose or suggest each and every element of claim 9. Hence, claim 9 is allowable.

Claim 14 depends from claim 9, which Applicants have shown to be allowable. Hence, Bryenton, Nishito, and Ohnishi fail to disclose at least one element of 14. Therefore, claim 14 is allowable, at least by virtue of its dependence from claim 9.

Further, the dependent claims recite additional features that are not disclosed by the cited references. For example, the Office Action admits that Bryenton does not disclose a memory to

store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 14. *See* Office Action, page 3. Further, Ohnishi does not disclose this element of claim 14. In contrast to claim 14, Ohnishi discloses scanning one side of a bill with an image sensor 2A on one edge of a bill, and another image sensor 2B on an opposite edge of the bill, and recording information for Zone 1 and Zone 2 on each edge, which is a total of four images. *See* Ohnishi, Figs. 5, 7, 8, 9, and col. 4, lines 16-18. Further, Nishito does not disclose or suggest this element of claim 14. In contrast to claim 14, Nishito discloses scanning only a center region of a bill. *See* Nishito, Figs. 1, 5, and col. 2, lines 40-45. Therefore, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each element of claim 14. For this additional reason, claim 14 is allowable.

Claims 2 and 13 are Allowable

The Office has rejected claims 2 and 13, at paragraph 3 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over Bryenton, Ohnishi, Nishito and further in view of U.S. Patent No. 4,984,280 ("Abe"). Applicants respectfully traverse the rejections.

As explained above, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each of the elements of claim 1. Abe does not disclose the elements of claim 1 that are not disclosed by Bryenton, Ohnishi, and Nishito. For example, Abe does not disclose a memory to store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 1. In contrast to claim 1, Abe discloses a ROM that stores reference patterns for discriminating the denomination of bills, but Abe does not disclose at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination. *See* Abe, col. 4, lines 30-37. Therefore, Bryenton, Ohnishi, and Nishito, and Abe do not disclose each and every element of claim 1, or of claim 2, which depends from claim 1.

Further, the dependent claims recite additional features not disclosed by the cited references. For example, the Office Action admits that Bryenton does not disclose that the

pattern recognizer is to use a rotation-invariant pattern matching algorithm to match the image of the bill to one of the built-in images, as recited in claim 2. *See* Office Action, page 5. In addition, neither Nishito nor Ohnishi disclose or suggest this element of claim 2. Further, Abe does not disclose this element of claim 2. In contrast to claim 2, Abe discloses that denomination of bills can be discriminated with high accuracy by only comparing the detected data with bill reference patterns, and that it is not necessary to provide a means for detecting the angle between the edges of the bill and the bill feed direction, nor to conduct a complicated calculation such as data rotation. *See* Abe, col. 9, lines 20-28. For this additional reason, claim 2 is allowable.

As explained above, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each of the elements of claim 9. Abe does not disclose the elements of claim 9 that are not disclosed by Bryenton, Ohnishi, and Nishito. For example, Abe does not disclose a camera to capture an image of a bill, as disclosed in claim 9. In contrast to claim 9, Abe discloses that a bill is fed along a bill feeding path, and an amount of light passing through the bill is photoelectrically detected pixel by pixel along a direction perpendicular to the bill feeding path by an image sensor disposed on an opposite side of a light source. *See* Abe, col. 2, line 62-col. 3, line 4. The apparatus of Abe is not a camera, which captures reflected light from all portions of a bill at the same time to produce an image of the bill, but instead the photoelectric sensor of Abe detects pixel by pixel, transmitted light passing through the bill. Therefore, Bryenton, Ohnishi, Nishito, and Abe, separately or in combination, do not disclose each of the elements of claim 9, or of claim 13, which depends from claim 9. Therefore, claim 13 is allowable.

Further, the dependent claims recite additional features not disclosed by the cited references. For example, For example, the Office Action admits that Bryenton does not disclose that the pattern recognizer is to use a rotation-invariant pattern matching algorithm to match the image of the bill to one of the built-in images, as recited in claim 13. *See* Office Action, page 5. Abe does not disclose this element of claim 13. In contrast to claim 13, Abe discloses that denomination of bills can be discriminated with high accuracy by only comparing the detected data with bill reference patterns, and that it is not necessary to provide a means for detecting the angle between the edges of the bill and the bill feed direction, nor to conduct a complicated

calculation such as data rotation. *See* Abe, col. 9, lines 20-28. Further, neither Ohnishi nor Nishito disclose this element of claim 13. For this additional reason, claim 13 is allowable.

Claims 6, 7 and 10-12 are Allowable

The Office has rejected claims 6, 7 and 10-12, at paragraph 4 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over Bryenton, Nishito, Ohnishi, and further in view of U.S. Patent No. 7,024,016 ("Rhoads"). [Applicants note that the Office Action, at paragraph 4, references U.S. Patent No. 6,278,441; however U.S. Patent No. 6,278,441 is not listed in the Office Action Notice of References Cited. U.S. Patent No. 7,024,016 ("Rhoads") is listed in the Notice of References Cited. *See* Office Action, Notice of References Cited, Reference E. Applicants assume that the Office intended to cite U.S. Patent No. 7,024,016 instead of U.S. Patent No. 6,278,441.] Applicants respectfully traverse the rejections.

As explained above, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each of the elements of claim 1. Rhoads does not disclose the elements of claim 1 that are not disclosed by Bryenton, Ohnishi, and Nishito. For example, Rhoads does not disclose a memory to store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 1. In contrast to claim 1, Rhoads discloses a handheld device to extract a watermark from a monetary object, through use of watermarking software, in order to determine currency denomination. *See* Rhoads, Abstract, and col. 5, lines 61-62. Therefore, Bryenton, Ohnishi, Nishito, and Rhoads, separately or in combination, do not disclose each of the elements of claim 1, or of claims 6 and 7, by virtue of their dependence from claim 1. Therefore, claims 6 and 7 are allowable.

None of the references, including Bryenton, Ohnishi, Nishito, and Rhoads, separately or in combination, disclose each of the elements of claim 10. For example, Bryenton does not disclose an output device that is to vibrate in a pattern unique to the denomination of the bill, as recited in claim 10. In contrast to claim 10, Bryenton discloses that a user interface can be replaced by a tactile device or other suitable output device, but Bryenton does not disclose the device to vibrate in a pattern unique to the denomination of the bill. *See* Bryenton, col. 4, lines

50-52. Further, neither Nishito nor Ohnishi disclose or suggest this element of claim 10. In further contrast to claim 10, Rhoads discloses an audio signal or Braille output feedback, and not vibration, as feedback from which to determine the currency denomination. *See Rhoads, Abstract.* For this additional reason, claim 10 is allowable.

Further, there is no motivation in any of the cited references to make the asserted combination. One skilled in the art would not be motivated to combine the digital watermarking apparatus and methods of Rhoads, with the optical scanning systems of Bryenton, Ohnishi, and Nishito. Digital watermarking entails encoding a physical object with plural-bit digital data in such a manner that the data is essentially hidden from human perception, yet can be recovered by computer analysis. *See Rhoads, col. 1, lines 51-55.* Rhoads, in its use of watermarking detection techniques, in fact *teaches away* from techniques utilizing optical scanning and comparison with a bank of standardized optical images. The watermarking detection techniques of Rhoads are accomplished through mathematical analysis of humanly imperceptible digitally encoded data. In contrast to the mathematical data analysis of Rhoads, the techniques of Bryenton, Ohnishi, and Nishito perform an optical comparison, i.e., pixel-by-pixel brightness comparison of printed shapes that are humanly perceptible by visual inspection of paper currency.

There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor."

See ATD Corp. v. Lydall, Inc., 159 F.3d 534, 48 USPQ2d 1321 (Fed. Cir. 1998).

[T]he factfinder must be aware of distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.

See KSR Int'l Co. v. Teleflex Inc., citing *Graham v. John Deere*, 383 U.S., at 36.

The Office has failed to provide a *prima facie* case of obviousness. There is no motivation for the asserted combination except that provided by Applicants' disclosure. Therefore, the combination represents an impermissible hindsight reconstruction, and should be withdrawn.

Claims 8 and 15 are Allowable

The Office has rejected claims 8 and 15, at paragraph 3 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over Bryenton, Ohnishi, Nishito and further in view of U.S. Patent Pub. No. 2005/0103838 ("Slotkin"). Applicants respectfully traverse the rejections.

As explained above, Bryenton, Ohnishi, and Nishito do not disclose each of the elements of claim 1. Slotkin does not disclose the elements of claim 1 that are not disclosed by Bryenton, Ohnishi, and Nishito. For examples, Slotkin does not disclose a memory to store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 1. In contrast to claim 1, Slotkin discloses an electronic business card device adapted to store at least one electronic business card, a sending mechanism, a receiving mechanism and a storing mechanism to store a received electronic business card. *See* Slotkin, Abstract. Therefore, Bryenton, Ohnishi, Nishito, and Slotkin, separately or in combination, do not disclose each of the elements of claim 1, or of claim 8, which depends from claim 1. Hence, claim 8 is allowable.

Further, the dependent claims recite additional features not disclosed by the cited references. For example, Slotkin does not disclose a key fob to house the memory, the camera, the pattern recognizer, and at least one output device, as recited in claim 8. In contrast to claim 8, Slotkin discloses a business card device adapted to store at least one electronic business card, a sending mechanism, a receiving mechanism and a storing mechanism to store a received electronic business card. *See* Slotkin, Abstract. Further, Bryenton, Ohnishi, and Nishito do not disclose this element of claim 8. For this additional reason, claim 8 is allowable.

As explained above, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each of the elements of claim 9. Slotkin does not disclose the elements of claim 9 that are not disclosed by Bryenton, Ohnishi, and Nishito. For example, Slotkin does not disclose a camera to capture an image of a bill, as disclosed in claim 9. In contrast to claim 9, Slotkin discloses a business card device adapted to store at least one electronic business card, a sending mechanism, a receiving mechanism and a storing mechanism to store a received electronic

business card. *See* Slotkin, Abstract. Therefore, Bryenton, Ohnishi, Nishito, and Slotkin, separately or in combination, do not disclose or suggest each of the elements of claim 9, or of claim 15, which depends from claim 9. Hence, claim 15 is allowable.

Further, the dependent claims recite additional features not disclosed by the cited references. For example, Slotkin does not disclose a key fob to house the memory, the camera, the pattern recognizer, and the tactile output device, as recited in claim 15. In contrast to claim 15, Slotkin discloses a business card device adapted to store at least one electronic business card, a sending mechanism, a receiving mechanism and a storing mechanism to store a received electronic business card. *See* Slotkin, Abstract. Further, Bryenton, Ohnishi, and Nishito do not disclose this element of claim 15. For this additional reason, claim 15 is allowable.

Claims 16-21 are Allowable

The Office has rejected claims 16-21, at paragraph 6 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over Bryenton, Ohnishi, and Nishito. Applicants respectfully traverse the rejections.

None of the cited references, including Bryenton, Ohnishi, and Nishito, separately or in combination, disclose each of the elements of claim 16. The Office Action admits that Bryenton, Ohnishi, and Nishito do not disclose a personal bill denomination reader in a mobile telephone. *See* Office Action, paragraph 6. Hence, Bryenton, Ohnishi, and Nishito do not disclose a mobile telephone including a pattern recognizer to match an image of a bill to a built-in image in memory, as recited in claim 16. The Office Action further states that a vibrate alert of a mobile phone, memory of a mobile phone and camera on a mobile phone is well known in the art. *See* Office Action, paragraph 6. Applicants submit that a mobile phone that includes a pattern recognizer to match an image of a bill to a built-in image in memory differs from a mobile phone that includes a vibrate alert, memory and a camera. Therefore, claim 16 is allowable.

Claims 17-21 depend from claim 16, which Applicants have shown to be allowable. Hence, Bryenton, Nishito, and Ohnishi fail to disclose at least one element of each of claims 17-

21. Accordingly, claims 17-21 are also allowable, at least by virtue of their dependence from claim 16.

Further, the dependent claims recite additional features that are not disclosed by the cited references. For example, the Office Action admits that Bryenton does not disclose a memory to store at least eight built-in images per bill denomination for a plurality of bill denominations, the at least eight built-in images comprising a corresponding image for each of four corners for each of two sides of the bill denomination, as recited in claim 17. *See* Office Action, page 3. Further, Ohnishi does not disclose this element of claim 17. In contrast to claim 17, Ohnishi discloses scanning one side of a bill with an image sensor 2A on one edge of a bill, and another image sensor 2B on an opposite edge of the bill, and recording information for Zone 1 and Zone 2 on each edge, which is a total of four images. *See* Ohnishi, Figs. 5, 7, 8, 9, and col. 4, lines 16-18. Further, Nishito does not disclose or suggest this element of claim 17. In contrast to claim 17, Nishito discloses scanning a center region of a bill. *See* Nishito, Figs. 1, 5, and col. 2, lines 40-45. For this additional reason, claim 17 is allowable.

Further, the Office Action admits that Bryenton does not disclose use of a rotation-invariant pattern matching algorithm to match the image of the bill to one of the built-in images, as recited in claim 18. *See* Office Action, page 5. Additionally, neither Ohnishi nor Nishito disclose this element of claim 18. Instead, Nishito discloses that a bill is scanned along the X-axis, and the bill is conveyed along the Y-axis, which is perpendicular to the X-axis. *See* Nishito, col. 2, lines 36-40. Nishito does not disclose a rotation-invariant pattern matching algorithm. In further contrast to claim 18, Ohnishi discloses scanning a bill in a horizontal direction, perpendicular to the carrying direction. *See* Ohnishi, Fig. 6. Ohnishi does not disclose a rotation-invariant pattern matching algorithm. Therefore, Bryenton, Nishito, and Ohnishi, separately or in combination, do not disclose each and every element of claim 18. For this additional reason, claim 18 is allowable.

Claims 19-21 are Allowable

The Office has rejected claims 19-21, at paragraph 6 of the Office Action, under 35 U.S.C. §103(a), as being unpatentable over Bryenton, Ohnishi, Nishito, and further in view of U.S. Patent No. 6, 094,587 ("Armanto"). Applicants respectfully traverse the rejections.

As explained above, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose each of the elements of claim 16. Armanto does not disclose the elements of claim 16 that are not disclosed by Bryenton, Ohnishi, and Nishito. For example, Armanto does not disclose a mobile phone that includes a pattern recognizer to match an image of a bill to a built-in image in memory, as recited in claim 16. Instead, Armanto discloses programming a ringing tone of a telephone. *See* Armanto, Abstract. Therefore, Bryenton, Ohnishi, Nishito, and Armanto, separately or in combination, do not disclose each and every element of claim 16, or claims 19-21, which depend from claim 16. Therefore, claims 19-21 are allowable.

Further, the dependent claims recite additional features that are not disclosed by the cited references. For example, Armanto does not disclose a mobile telephone including an output selector to determine a mode to report the denomination of the bill, as recited in claim 19. In contrast to claim 19, Armanto discloses several pre-stored ring tones from amongst which a user may select a preferred ringing tone. *See* Armanto, col. 1, lines 36-41. Further, Bryenton, Ohnishi, and Nishito, separately or in combination, do not disclose or suggest this element of claim 19. For at least this additional reason, claim 19 is allowable. Claims 20-21 depend from claim 19, and are therefore allowable at least by virtue of their dependence from claim 19.

Further, the dependent claims recite additional features that are not disclosed by the cited references. For example, Armanto does not disclose a mobile telephone including an audible ringer to generate one or more distinctive, non-speech tones unique to the denomination of the bill based on the match from the pattern recognizer, as recited in claim 21. In contrast to claim 21, Armanto discloses several pre-stored ring tones from amongst which a user may select a preferred ringing tone. *See* Armanto, col. 1, lines 36-41. Further, Bryenton, Ohnishi, and Nishito do not disclose this element of claim 21. For this additional reason, claim 21 is allowable.

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CONCLUSION

Applicants have pointed out specific features of the claims not disclosed, suggested, or rendered obvious by the references applied in the Office Action. Accordingly, Applicants respectfully request reconsideration and withdrawal of each of the objections and rejections, as well as an indication of the allowability of each of the pending claims.

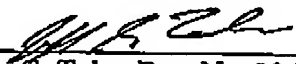
Any changes to the claims in this amendment, which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

The Examiner is invited to contact the undersigned attorney at the telephone number listed below if such a call would in any way facilitate allowance of this application.

The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

7-2-2007
Date


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